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State of Utah  
Department of Environmental Quality  
Division of Environmental Response and Remediation

# **Leaking Underground Storage Tank (LUST) Corrective Action Plan Guide**

A Customer Guide to assist Utah owners and operators  
of underground storage tanks in their clean-up of  
petroleum contamination from LUST sites.

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A petroleum release has been confirmed at your facility, and contamination exceeds clean-up screening levels. You are therefore required to investigate and remediate the release.

This publication will guide you through the process of preparing the **Corrective Action Plan** as required under the state-established compliance schedule(s) for releases of petroleum products from underground storage tank (UST) systems. Clean-up of petroleum contamination is required to meet state-established clean-up levels which are usually based on site-specific conditions in order to properly protect human health and the environment at the release site, and other impacted areas.

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## Corrective Action Plan (CAP) Checklist

The following checklist will provide you with a summary of the steps between discovery of a petroleum release, investigation, and remediation (clean-up) of your release and final site closure. It is designed to help you understand the steps involved, to graphically track your progress, and show how near to completion of the process you are.

X	Important Steps to Remember
	Report the release within 24 hours of discovery to the Division of Environmental Response and Remediation (DERR). Stop the source of the release and prevent the spread of further contamination.
	If the leak or release occurred from a tank that has a valid certificate of compliance, submit an Eligibility Application for reimbursement of investigation and clean-up costs from the Utah Petroleum Storage Tank (PST) Fund. Refer to the DERR's publication "Petroleum Storage Tank Fund Claims Packet" for complete eligibility and reimbursement information.
	Prepare and submit a "Subsurface Investigation Report" within <b>90</b> days of notification from the DERR. See the Subsurface Investigation Report Guide for more details on this scope of work.
	If free product is found, prepare a "Free Product Removal Report" and include it with your Subsurface Investigation Report or your Corrective Action Plan, if needed. Use this guide for preparing your Free Product Removal Report (pg 10).
	Refer to the "Permitting Requirements List" contained in this guide (pg 7) for any applicable reporting or permitting requirements by other regulatory agencies for the release at your facility.
	Submit a "Corrective Action Plan" within <b>90</b> days of notification from the DERR, to clean-up contamination to established clean-up levels. Use this guide for preparing the report.
	Once work or clean-up at the site is completed as determined by the DERR, request site closure in the form of a "no further action" letter from the DERR.

## Frequently Asked Questions

### *Why should I submit a Corrective Action Plan?*

There are two reasons why you must submit this report to the Utah Division of Environmental Response and Remediation (DERR). First, you are required by Utah law to report, control, abate and characterize the release by defining the extent and degree of contamination, and conduct remediation (clean-up) if necessary. And second, it will enable the DERR to help guide you through the investigation and clean-up process to make it as timely, site-specific and cost effective as possible. If information regarding your release site indicates relatively high levels of petroleum contamination, further investigation will help determine if there are risks involved of contaminating drinking water, indoor air, surface water, sensitive wildlife habitats

*The answer to these questions can help you get started.*

or to otherwise potentially harm human health or the environment. The Subsurface Investigation Report provides information to help determine these potential risks. This Corrective Action Plan (CAP) guide will help you through the clean-up process and enable you to turn in a more complete corrective action plan for the DERR's review and approval prior to implementation.

### ***Should I hire a consultant?***

Utah law requires that after December 31, 1995, contractors or environmental consultants must be certified as a "Certified UST consultant" to perform work at any UST release site.

You will need to hire the services of a trained and experienced environmental consultant or contractor to assist you with necessary abatement, investigation and clean-up work and associated reports. Environmental professionals with experience in leaking underground storage tank (LUST) site investigations and clean-ups are available to help you with this work in a timely and cost effective manner. It is in your best interest to get several competitive bids before beginning the work. The DERR has a list of consultants available upon request. The State of Utah does not endorse any consultant or company, but maintains this list of contractors and consultants who have indicated an ability to perform the required work for your benefit.

*You will need to use a state-certified environmental consultant to complete your corrective action plan.*

### ***When do I submit the report?***

A Corrective Action Plan is due **90** days after receiving this guide from the DERR. Please contact your project manager with any questions regarding your release site, or the required report(s).

### ***How do I file the report?***

Submit your Corrective Action Plan to your DERR project manager at:

Utah Department of Environmental Quality  
Division of Environmental Response and Remediation  
Leaking Underground Storage Tank (LUST) Section  
168 North 1950 West, First Floor  
Salt Lake City, Utah 84116  
(801) 536-4100

You can deliver the report in person to this address, or you may send it by mail.

### ***What information should the report contain?***

The remainder of this guide contains the information necessary for putting together the Corrective Action Plan. If you use this guide and include the specific information detailed in it, your report will be complete and will minimize the DERR's review and response time. Also, a complete report will help minimize any additional expense or time on your part for the collection of additional data and information.

# COMPONENTS OF THE CORRECTIVE ACTION PLAN

## Executive Summary

*Create an at-a-glance summary of your report.*

The Executive Summary is a brief summary of the report. It can be as brief as one or two paragraphs and should provide a summary of the information contained in this report. Generally, this section should discuss the proposed corrective action and why it was chosen.

## Table of Contents

Your Corrective Action Plan's Table of Contents should include the following sections which are described below:

*A table of contents can work as a checklist, assuring the report is complete.*

1. Introduction
2. Corrective Action Comparison and Selection
3. Corrective Action Design and Construction Details
4. Permitting Requirements
5. Public Notification
6. Sampling and Monitoring Plan
7. References and Appendices

## 1 Introduction

The introduction section should include the following information:

*Your introduction should include general information about the site.*

- Your facility identification number, release site number and location or address of the release site.
- The purpose and objectives of the corrective action.
- A brief description of the work completed at the site, and an updated site map.

## 2 Corrective Action Comparison and Selection

This section should list some of the cleanup options with their estimated duration, approximate costs, and relative effectiveness, appropriate for your release site conditions. It should include:

*Include a general comparison of alternative clean-up methods that were considered but not chosen, as well as justification for the preferred clean-up option.*

- A profile of remedial selections and screening data, including:
  - Cost comparisons, considering both initial capital costs and sampling, operations and maintenance costs.
  - Feasibility of clean-up technologies, based on such factors as soil type, depth to groundwater, extent of contamination, contamination characteristics, hydraulic conductivity, etc.
  - Current land use at the site and anticipated future land use at the site.
  - Availability of land for remedial activity.
- A discussion of the selected corrective action technology and the rationale for its selection.

### 3 Corrective Action Design and Construction Details

This section should contain site-specific design and construction details of the selected corrective action technology and should include:

A complete set of appropriately scaled construction drawings showing locations and engineering details.

Design criteria & supporting calculations for sizing & locating the various clean-up components, including equipment & other technical specifications.

- Operations and maintenance specifications including:
  - A description of the type of operations and maintenance required for the proposed corrective action. Also discuss safety and security measures, and identify who is responsible for providing it.
  - A sampling and monitoring schedule for the corrective action.
  - An emergency response plan.
- Calculated removal rates of contaminants, estimated efficiency of the system, and the expected duration of the cleanup process.
- Document that any necessary approvals or permits were obtained from other regulatory agencies (page 7).

*Include specific details of the corrective action scheme that was chosen.*

*A picture is worth a thousand words. Prepare good maps and drawings.*

### 4 Permitting Requirements

You may need the approval of different regulatory agencies during the course of remediating petroleum releases. Please refer to the enclosed "Permitting Requirements List" (page 7) for more information. If you have any questions about obtaining approval from other agencies, please contact your DERR project manager at (801) 536-4100.

### 5 Public Notification

*Prior to implementing any corrective action, the potentially affected public must be notified of the corrective action, and given an opportunity to comment. The Executive Secretary (UST) requires public notification by a means designed to reach the segment of the public who may be directly affected by the release or the corrective action process. These methods may include personal contact or notice, notice in newspapers or flyers, or other appropriate methods.*

*Include specific details of the corrective action scheme that was chosen.*

A public notice must contain the following information:

- The name and address of the release site.
- A brief summary of the release and the site conditions.
- The purpose of the corrective action.
- The name and telephone number of your DERR project manager.
- The location, dates and time where the Corrective Action Plan may be viewed by the public.
- The due date for submission of any comments, and the mailing address for the DERR project manager where the interested public may send their comments on the proposed cleanup activities.
- The duration of the notification and comment period typically vary from a few days to several weeks. Check with your project manager to coordinate this task prior to distribution of your proposed public notice.

*A picture is worth a thousand words. Prepare good maps and drawings.*

*You must provide verification of this public notification to your DERR project manager. This verification may consist of newspaper tearsheets, certified mail receipts, or a list of the households and businesses (names and addresses) which are potentially affected and who have been notified.*

If there is sufficient public interest, or for any other reason, the DERR may require and schedule a public meeting to address these concerns. Public notification must be approved by the Executive Secretary (UST) and posted prior to any implementation of the Corrective Action Plan.

## 6 Sampling and Monitoring Plan

This section contains your plan for sampling and monitoring during the cleanup process, until verification (confirmation sampling) that the contamination has reached the required clean-up levels. Following the DERR's approval of your sampling and monitoring plan, the associated reports must be submitted according to the approved schedule. The reports should show chronological progress of the CAP and the current status or levels of the contamination. This section and plan should include:

- A sampling protocol for the corrective action plan, as specified in the "Sampling Procedures and Requirements" section (page 8).
- Sampling methodology and analytical methods to be used.
- The location and depth, frequency and rationale for selection of all samples collected.
- The certified sampler and laboratory you plan to use for sample collection and analyses.

*You will be required to submit a Post-Remedial Verification Report to the DERR after the corrective action is completed and the site is ready for close-out. This report verifies and documents the effectiveness of the corrective action plan implemented at your release site.*

Please see the enclosed "Sampling Procedures and Requirements" (page 8) for additional information.

## 7 References and Appendices

Refer to any outside publications or sources you used for information in preparing this report, or references to documents or reports previously submitted.

Additional documents may be added as appendices, including:

- Manufacturers technical specifications for remedial equipment.
- Soil boring or groundwater monitor well construction logs.
- Photographs and other supporting information.
- Engineering or technical drawings or schematics.
- Other agency permits or approval letters, if applicable.
- Proof of public notification.
- Laboratory results and Chain of Custody forms.

*Make sure your consultant is using a sampling program best suited to your release site conditions.*

*Additional information and documents related to your clean-up plan can be included as appendix items.*

## ***ADDITIONAL INFORMATION***

### ***Permitting Requirements List***

You may need the approval of the following agencies during the course of investigating and remediating petroleum releases. If you have any questions about obtaining approval from other agencies, please contact your DERR project manager at (801) 536-4100.

*Contact other agencies for necessary approvals or permits.*

#### **Utah Division of Air Quality (801) 536-4000**

If you anticipate emitting hydrocarbon or petroleum vapors into the atmosphere during any phase of the investigation or clean-up, notify Air Quality so they may determine whether an air discharge permit or approval letter is required. Submit documentation of notification and any permits or approvals to the DERR.

#### **Utah Division of Water Quality (801) 538-6146**

If you know that groundwater has been impacted by a free-phase petroleum product, or that surface waters have been contaminated, notify Water Quality. Any required permits or approvals, including groundwater or surface water discharge, pretreatment or reinjection, must be obtained prior to implementing corrective action or abatement measures. Documentation of the notification and any permits or approvals obtained should be submitted to the DERR.

#### **Utah Division of Solid and Hazardous Waste (801) 538-6170**

If you suspect or know the release at your site is a hazardous waste (such as cleaning solvents) or a mixed hazardous/petroleum waste, notify Solid and Hazardous Waste to ensure compliance with permitting, disposal, sampling and other related activities.

#### **Utah Division of Water Rights (801) 538-7240**

Contact Water Rights for well installation and abandonment procedures for wells greater than 30 feet below grade, and any other permits required by their Administrative Rules for water well drillers. Submit documentation of the notification and any permits or approvals obtained to the DERR.

#### **Utah Department of Transportation (UDOT) (801) 965-4000**

If you need to work in the public right of way for investigation, sampling or any construction activities, call UDOT, the city, the county or other appropriate agency for the necessary approvals.

#### **Sanitary Sewer District**

To discharge petroleum contaminated water or waste water to the local sanitary sewer, check your local listing in the Blue Pages for specific numbers listed under "Public Works" or "Sewer", or call the DERR for more information.

#### **Blue Stakes (800) 662-4111 or (801) 532-5000**

Contact Blue Stakes or other appropriate agency for marking underground public utilities prior to any digging or construction activities.



## Local Health Department

Contact your local health department or other appropriate agencies (Fire Department, etc.) for any applicable permits, applications or fees they may require for activities related to investigation, construction, corrective action, system operation, disposal or emissions at your release site. These approvals or requirements may vary greatly between different cities or counties.

## *Sampling Procedures and Requirements*

Follow the guidelines in this section to ensure that all types of samples collected are of good integrity, and are representative of environmental conditions and contaminant levels. Remember that all samples must be collected by an UST Certified Soil and Groundwater Sampler.

*Following these sampling guidelines will help minimize the need to re-sample. It is important to do it right the first time, so call the DERR with any sampling questions.*

- Describe or document any necessary property access and other permitting requirements.
- All soil, groundwater, surface water, or other types of environmental samples must be collected by a Utah certified sampler and analyzed by a Utah certified laboratory. The name and certification number of the sampler and laboratory must be clearly identified.
- Native soil type can be evaluated using Unified Soil Classification methods. Other detailed lithological descriptions may also be necessary.
- Describe subsurface stratigraphy and continuity of strata beneath the site, such as clay, silt or sand lenses, interbedded strata and other features.
- Chain-of-custody protocols and documentation must be maintained and provided for all environmental samples collected.
- All sample identifications, names and numbers should be consistent throughout the chain-of-custody protocol and documentation, laboratory analytical results, site map, data tables and report text.
- Describe sampling methodology, equipment and decontamination procedures.
- Describe the rationale for selecting sample locations and sampled intervals in excavations, test pits, soil/well borings, soil land farms, soil stockpiles or other sample locations. Describe whether the sample location determination was based on field instrument measurements, pre-selected intervals or other rationale.
- Describe and/or illustrate depths at which all soil and/or groundwater samples were collected and show sample locations on a properly scaled and oriented map.
- Identify the sample type(s) collected such as confirmation, grab, composite, headspace, blanks, duplicates, etc., and rationale for their selection.
- Specify the following sampled features and the applicable media sampled, including but not limited to; excavations, test pits, soil borings, soil stockpiles, soil land farms or aeration piles, groundwater monitoring wells, groundwater injection or extraction wells or other types of water wells.
- Provide descriptions of field screening methods and devices used including organic vapor meters or other test methods for detecting the presence of contamination.
- **Sampling procedures must be conducted in a manner which minimizes the loss of volatile organic compounds.** Describe the methods used to minimize the loss of volatiles and maintain sample integrity, such as zero headspace in sample containers and preserving the sample at 4° Celsius.
- Samples should be immediately delivered to the laboratory. If not, describe the methods used to preserve samples and maintain sample integrity within the applicable holding times.
- Laboratory analytical detection limits must be sufficiently low in order to detect contaminant concentrations at or below their applicable minimum detection levels or state-established clean-up levels.
- Describe the volume removed (gallons), the method used for purging groundwater wells, and the location or method used for the disposal of purge water.
- Groundwater well installation and abandonment must be conducted in accordance with the Utah Division of Water Rights specifications if the wells are deeper than 30 feet below grade.

- If soil borings or wells are emplaced, the following information is required:
  - Type of drilling equipment used, and detailed geologic boring logs with an appropriate vertical scale shown.
  - As-built drawings showing: number of wells and/or borings; total depth of well or boring; well construction materials including casing screen type, length, slot size, filter pack material and particle size;
  - Sample locations for soil or groundwater; and, any organic vapor meter measurements.
  - Type and placement of extraction pumps, if applicable.
  - Identify the depth of groundwater (feet below grade) encountered at the site during sampling or investigations.
  - Describe the volume generated and the procedures used to dispose of drill cuttings, purge water or other waste materials generated during any phase of the work at the release site.
- Confirmation environmental samples (soil, groundwater, etc.) are required any time contamination is treated in-place or removed from the subsurface or release site area.
- Analytical Methods and Contamination Determination: The following table shows the constituents for each product type which must be analyzed using approved analytical methods. Other appropriate analytical methods may be used as approved by the Executive Secretary (UST) for any of the methods outlined below. The analysis of additional constituents may be required as determined by the Executive Secretary (UST).

***Table of Analytical Methods for Sampling  
(March 31, 1999)***

Substance or Product Type	Contaminant Compounds to be Analyzed	ANALYTICAL METHODS <sup>1</sup>
		Soil, Groundwater or Surface Water
<b>Gasoline</b>	Total Petroleum Hydrocarbons (TPH); <u>and</u> Benzene, Toluene, Ethyl benzene, Xylenes, Naphthalene, (BTEXN) and MTBE	EPA 8015B <sup>1</sup> <u>and</u> EPA 8021B <sup>1</sup> or 8260B
<b>Diesel</b>	Total Petroleum Hydrocarbons (TPH); <u>and</u> Benzene, Toluene, Ethyl benzene, Xylenes, and Naphthalene (BTEXN)	EPA 8015B <u>and</u> EPA 8021B or 8260B
<b>Used Oil</b>	Oil and Grease (O&G) or Total Recoverable Petroleum Hydrocarbons (TRPH); <u>and</u> Benzene, Toluene, Ethyl benzene, Xylenes, Naphthalene (BTEXN) and MTBE; <u>and</u> Halogenated Volatile Organic Compounds (VOC's)	EPA 1664 or 5520 <sup>2</sup> <u>and</u> EPA 8021B or 8260B
<b>New Oil</b>	Oil and Grease (O&G) or Total Recoverable Petroleum Hydrocarbons (TRPH)	EPA 1664 or 5520
<b>Other or Unknown</b>	Total Petroleum Hydrocarbons (TPH); <u>and</u> Benzene, Toluene, Ethyl benzene, Xylenes, and Naphthalene (BTEXN); <u>and</u> Halogenated Volatile Organic Compounds (VOC's)	EPA 8015B <u>and</u> EPA 8021B or 8260B

<sup>1</sup> The following modifications to these certified methods are considered acceptable by the Executive Secretary (UST):

- A. Dual column confirmation may not be required for TPH & BTEXN/MTBE analysis.
- B. A micro-extraction or scale-down technique may be used for aqueous samples.
- C. Hexane may be used as an extraction solvent.

**NOTE:** The sample preparation method and any modification(s) to a certified method must be reported by the laboratory on the final analytical report.

<sup>2</sup> Methods or test procedures allowed for Oil and Grease (O&G) or Total Recoverable Petroleum Hydrocarbons (TRPH) are 5520(b) or 5520(f) respectively.

***Don't forget to take confirmation samples.***

*Consult this table to determine the right testing methods to use during your investigation and other sampling events. Other fuel types such as kerosene, aviation fuel, etc., may be able to be determined by some of these analytical methods.*

*Some suggestions to make your sampling more cost effective and to provide more information during the initial sampling event(s).*

Be sure to check with your DERR project manager or your environmental consultant if you have any questions regarding your sampling program or corrective action plan requirements. Some suggestions or ideas to consider when developing your sampling, operation or maintenance plan may include:

- Take both types of samples (e.g., soil and groundwater) if groundwater was encountered during the course of soil sampling.
- Take two or more soil samples in selected locations to better define the vertical extent of contamination. This data will aid in clean-up or closure evaluations.
- Conduct continuous sampling of soil boring(s) or collect multiple samples per location to better define the native soil type, contaminated interval or vertical profile, geological features and related items.
- Upgrade your analytical method(s) to get more complete information during the initial sampling events and minimize re-sampling events.
- Have enough budget set aside to be flexible in the number of actual samples submitted for laboratory analyses, or the number of soil borings or groundwater monitoring wells drilled, etc.
- Check with other regulatory agencies to ensure sampling meets with their requirements for waste disposal or other related items.
- Obtain any necessary off-site access agreements or highway easements for potential work outside your property boundaries in determining the extent and degree of subsurface soil and groundwater contamination.
- For vapor, air, or any other type of environmental sampling, determine the appropriate analytical method and sampling procedures prior to field collection.

## ***Free Product Removal Report***

*It may be necessary to file a Free Product Removal Report with your Corrective Action Plan.*

Free product can be a severe safety hazard as well as a high risk to human health and the environment. If free phase product is observed at any time (e.g., an 1/8" or more of gasoline, diesel or other petroleum products outside the intended storage system), you must immediately begin source removal. Your free product removal procedures should minimize the spread and migration of contamination into uncontaminated areas and must be removed as completely as possible. This Free Product Removal Report section should include:

- Documentation that you notified the Utah Division of Air Quality at (801) 536-4000 for obtaining approvals or permits related to air emissions from your free product recovery system.
- Documentation that you notified the Utah Division of Water Quality at (801) 538-6146 of free product in contact with groundwater or surface water, and that you obtained the necessary permits or approvals for free product disposal or effluent water discharge related to your free product recovery system.
- Site map and tables showing any information pertinent to free product quantity, thickness, type, extent and other relevant details.
- Construction details and other relevant aspects of the free product removal system such as how much was removed, the disposal location or disposal method used and the current site status.
- If water was extracted in conjunction with free product, sample collection may be necessary in order to characterize the effluent (water) quality and dissolved contamination levels. If so, please include all sampling results in the report. Proper procedures, as detailed in the "Sampling Procedures and Requirements" (page 8), should be followed and documented.

*Groundwater shall not be disposed of in a manner placing it in direct contact with the environment or which causes contamination to previously uncontaminated areas.*